

The 1851 botanical excursion of Ferdinand Mueller to the Flinders Ranges, South Australia

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Abstract

Aspects of the botany, geography and chronology of Ferdinand Mueller's excursion to the Flinders Ranges are examined. Available data suggests that Mueller gathered about 270 species during the trip. An effort has been made to accurately locate Mueller's collection sites and ascertain visiting dates. The botanical importance of this excursion is considered.

Dr Ferdinand Jacob Heinrich Mueller was only 22 years of age when, accompanied by his younger sisters Bertha and Clara, he landed at Largs Bay, South Australia in December 1847. The migrant ship *Herman von Beckerath* was 152 days out of Bremen. The trio were treated with hospitality; the sisters were cared for by the Davenport family and Ferdinand was soon employed at Herr Heuzenroeder's Rundle Street chemist shop in the developing town of Adelaide.

Heuzenroeder must have been rather liberal in his terms of employment, for Mueller quickly set about exploring the botanical novelties in his adopted country. Sometimes he was alone but was occasionally accompanied by associates such as Charles Stuart.¹ Some of these expeditions were short and repeated, such as those made to the Barossa Valley and Enfield Scrub. Other trips, such as to the Murray Scrub, east of the Mt lofty Ranges, were not only longer but to areas lacking in surface waters, which would have taxed his resourcefulness and bushmanship. By September 1848 Mueller was attempting to sell sets of pressed indigenous botanical specimens, systematically arranged and with notes.² It is not known how successfully this enterprise turned out, but in November 1850 (Gemmell 1975) he purchased land in the Bugle Ranges, close to the Davenport family and his older friend, Ludwig Fiseher. The tiny hut which gave him shelter and stored his specimens still stands.

During November 1848 Dr Herman Behr arrived in South Australia for the second time. Behr was seven years Mueller's senior and had already made a significant botanical exploration around the Barossa Valley (Kraehenbuehl 1981). In 1849, in a letter to Professor Kunze in Leipzig, he expressed the hope of extending his botanical explorations to Spencer Gulf in the forthcoming spring.³ It is likely Mueller knew of these intentions. But, by the time the spring of 1849 had arrived, Behr had chosen differently and, about October, left South Australia for good.

Mueller must have been very enthusiastic about the idea of a trip to Spencer Gulf for, in September 1850, he⁴ appealed to the Colonial Secretary, Charles Sturt, to be supported in an expedition to the north to collect indigenous plants that may prove of benefit to the Colony. Sturt returned a short, but polite, refusal.⁵

With the new year of 1851 the Government was in the throes of abandoning the system of occupational licences for holding land and instead instituting pastoral leases. Before this could be done a survey of the northern pastoral frontier was necessary. The Northern Expedition, under the leadership of H. C. Rawnsley, was formed to carry out this task. In February, in an attempt to join the party as botanist and physician, Mueller⁶ again wrote to the Colonial Secretary. But, with the colonial coffers low, Sturt was adamant that only surveying crews would go.

The year of 1851 is notable for at least one other event. With a total of 786 mm of rain, it still stands as the wettest year recorded in Adelaide. With likely good penetration of the winter cold fronts into the Spencer Gulf area, Mueller must have been keen to explore for botanical novelties. With all hope of some sort of sponsorship gone Mueller began to consider a small expedition of his own. For information on the area to be traversed Mueller probably called upon men like S. T. Gill and Frederiek Sinnett. Gill had travelled to the western flank of Lake Torrens in 1846 with the Horrock's Expedition and had also revisited much of the area in 1847, fulfilling artistic commissions and expanding his experiences (Appleyard et al. 1986). Sinnett, an early surveyor about the Wilpena and Mt Brown areas, had returned to Adelaide about August of 1851, spoke German fluently, and was well known to Mueller (Sinnett 1855).

Mueller by this time had managed to purchase about 60 acres in the Wistow area near Maelesfield. Early in 1851, presumably to raise money for his expedition, he sold 20 acres of this to Ludwig Fiseher. But, in spite of geographical information from his contacts, Mueller still faced a formidable problem in a day and age where sign posts were rare and maps often vague. Then, in September, Gill was declared insolvent.⁷ It was an opportune moment for Mueller to be assisted on his expedition and there is some evidence (Gill's signature on paintings etc., Grandison unpubl.) that Gill may have accompanied Mueller to at least Depot Creek. However, for the following narrative I am assuming that Mueller was unaccompanied.

Judging from collections made by Mueller late in September 1851 it appears that the house of August

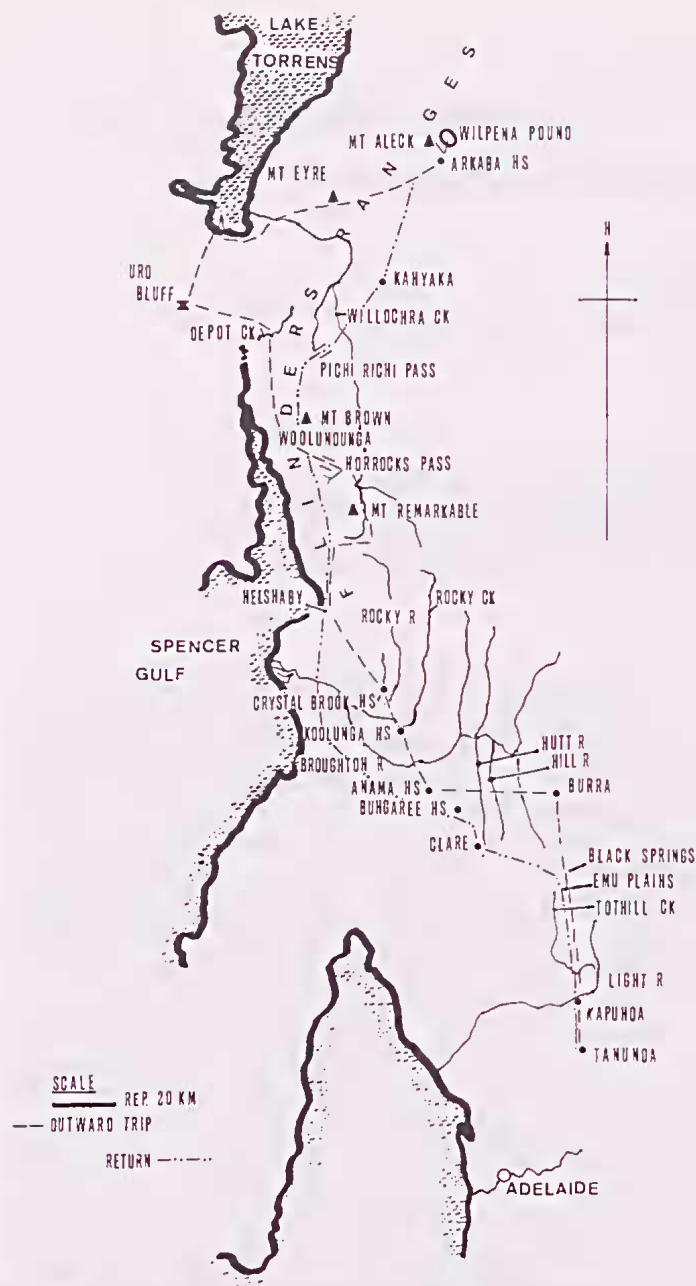


Fig. 1. The 1851 route taken by Mueller to the Flinders Ranges.

Fiedler⁸, at Tanunda, was the starting point of the expedition to the Spencer Gulf and Flinders Ranges. It was also the start of my latter day headaches in attempting to piece the succeeding events together. Willis (1949) and Kraehenbuehl (1971) had made reference to the journey but details were lacking. Botanical literature was also misleading, with one author (Kynaston 1981, p. 64) suggesting that Mueller had made more than one trip to the Flinders Ranges. He only made a single trip⁹, and the route taken is displayed in Fig. 1.

Sources of information

Mueller does not appear to have kept a diary of the trip. Therefore, information provided below on the plants, collecting localities, and dates of the trip, have been gained from other sources. Few unpublished letters pertaining to the trip have been located.^{9,24}

Many of the species gathered on the trip, plus specific localities, were referred to in 'Diagnoses et descriptiones plantarum novarum in Nova Hollandia...' (Mueller 1853a) and in 'Plantae Muellerianae ...

Compositae' (Sonder 1853). Specimens were also cited by Bentham (1855, 1863-1878), and by Mueller in other publications, including *The plants indigenous to the Colony of Victoria* (Mueller 1862). Various revisions by other authors also cite collections gathered by Mueller (e.g. Barker 1982). Mueller's account (Mueller 1853b) of the vegetation of the Lake Torrens area provided little information on localities and specimens collected, referring to plants mostly at the generic or family level.

Herbarium specimens, particularly at the National Herbarium of Victoria (MEL), but also at the Herbarium, Royal Botanic Gardens, Kew (K) have provided much data on localities and dates of collection. Searches have so far revealed that about 270 species were gathered on the trip.¹⁰

The search for geographical names was facilitated by reference to records at the South Australian Department of Lands. However, some sites, such as Ultonulla, have been impossible to locate. Local knowledge was required to rediscover sites on Mueller's 'Rocky Creek' that could be described as 'stony declivities'. This creek is now known as Yackamoondie Creek.

The excursion

As far as can be ascertained from the limited records it appears that Mueller left Adelaide for Gawler and Lyndoch on, or about, Thursday 25 September 1851. Besides being mounted he may have had one or two pack horses in tow, but no details of this aspect of preparation are known.

Fiedler's house at Tanunda was probably reached on the 27th during some inclement weather.¹¹ Back dating known events suggest Mueller left Fiedler's place on Monday the 29th, travelling to Kapunda where just a few specimens were collected, then onto Dutton's place on the River Light. The next day he seems to have reached the Burra Mines. This travel would have presented no difficulty as both the Kapunda and Burra mine trails were very distinct as a result of the coming and going of bullock teams hauling copper ore. Mueller collected sparingly, only taking specimens of a *Swainsona* Salisb., *Acacia paradoxa* DC. and several composites. Although Gill had been to Burra several times previously for painting no contacts are known for this trip and Mueller did not stay long before heading westward towards the Camel's Hump, north of Clare. In the vicinity of the small streams of the Hill and Hutt Rivers another small plant collection was made.

Pushing on past what had recently been John Watt's Anama Run he struck the Broughton River, somewhat downstream of present day Yacka township, and followed the trail to John Hope's station. The station homestead, now a mere foundation ruin in a paddock, overlooks the Yackamoondie Creek ('Rocky Creek' of Mueller) where, according to Mueller, it is set in a stony declivity. Around here he collected approximately a dozen plants on or about 4 October. On the way to Crystal Brook, which was probably the station run by Peter Ferguson rather than the very small settlement of the same name, he crossed the Rocky River. Once more a small collection was made, mostly of *Acacia saligna* (Labill.) H. L. Wendl., some crucifers and several introduced weeds.

At Crystal Brook his collections were more extensive than had hitherto been the case. Here he collected syntype specimens of *Sida petrophila* F. Muell.¹² and *Erysium trisectum* F. Muell.¹³ [= *Arabidella trisecta* (F. Muell.) O. Schulz], with at least the former being gathered on 7 October. A number of annual composites were also collected here, as well as several introduced weeds, a sure sign of the pastoral invasion. Collection labels suggest that, after a day or so at Crystal Brook, he wandered out towards Pirie Harbour then back to the ranges to Nelshaby where there was a soak. Here, in the immediate outwash of the gorge, grows almost a monoculture of the Flinders Range wattle, *Acacia iteaphylla* F. Muell. ex Benth. It is probably here that Mueller collected type material of the species. The syntype at K has Arkaba given as the locality but this seems to be an error. *A. iteaphylla* has not been collected east of the coastal ranges nor much further north than Pt Augusta (Whibley 1980).

From here a move, along the coastal foot of the range, was made to Baroota. In the sheltered bed of Stony Creek he collected syntypes of *Teucrium petrophilum* F. Muell.¹⁴ (= *T. corymbosum* R. Br.). Gill had made several paintings in the area of the Stony Creek gorge in 1846 and 1847. *Parahebe decorosa* (F. Muell.) B. Briggs & Ehrend. (syn. *Veronica decorosa* F. Muell.) grows about the twin waterfall area painted by Gill and it may be that the syntype specimens of *V. decorosa* were gathered here.¹⁵ From the gorge Mueller struck up the steep slope into the ranges, along what was to become known as the Bridle Track, and emerged at or near Yeates's Station on Wild Dog Creek, which is just north of the present day township of Murraytown.

Several days were then spent in the area of Mt Remarkable. It appears likely a northern approach to the mountain was made along the course of Spring Creek. This approach had been pioneered in 1846 by Gill, and Colin Campbell who had a run near present day Melrose. Here a horse can be ridden a good part of the way up the slope, which compares favourably with the difficult ascent necessary from the Melrose side. Mueller made a collection of acacias, including *Acacia notabilis* F. Muell.¹⁶ Several taxa with restricted distribution, such as *Hovea beckeri* F. Muell.¹⁷, *Euphrasia collina* R. Br. subsp. *tetragona* (R. Br.) Barker¹⁸, *E. collina* subsp. *muelleri* (Wettst.) Barker¹⁹ (both now locally extinct), *Eucalyptus albens* Benth.²⁰ and *Pultenaea hispidula* R. Br. were also gathered at Mt Remarkable.

By about the 16th he was near the eastern entrance to Horrocks Pass, or Beautiful Valley as it was then known. A detour to what is now known as Hancock's Lookout has been identified as a Gill painting site. In the coastal distance and separate from the main range is Mt Gullet. Downhill from the lookout, and on the head-waters of Mt Gullet Creek, Mueller collected the introduced *Malvastrum americanum* (L.) Torrey (Kloot 1983).

Travelling through Horrocks Pass and back to the coastal side of the ranges, he briefly stopped at Woolundunga Spring, the only source of permanent water in the area. Then he hastened on, crossing Saltia Creek en route to Eyre's Depot Creek. As permanent water was available from springs in the gorge Depot Creek had been the site of the main base camp for the 1846 Horroek's Expedition to the northwest. During

his stay Gill had sketched several scenes here. One of them²¹ portrays a singular kind of small tree which could be *Codonocarpus pyramidalis* (F. Muell.) F. Muell. Today this species is locally common on the hillsides around Depot Creek²² but no specimens seem to have been gathered here by Mueller. In his description of the species, as *Gyrostemon pyramidalis* F. Muell., he only made reference to collections gathered in the Elder Range.²³ In fact very few plant collections from Depot Creek have been located. It is also evident from my investigations that any collections labelled as coming from Mt Arden should probably be considered to be from Depot Creek. The difficult terrain and limited time spent here make it seem highly unlikely that the mountain was very closely approached, let alone climbed.

From Depot Creek Mueller moved west-northwest across the open saltbush plain, the saline flats at the head of Spencer Gulf, to the abrupt edge of Uro Bluff. Mueller would have known from preparatory information that he could expect to find little water in this area. He collected with more zeal as he headed northward over the tableland towards the thinly salt-crusted Lake Torrens. Some years later Mueller²⁴ commented about how he had seen the Banded Ant-eater or numbat (*Myrmecobius fasciatus*) on the lake. This creature, now extinct in South Australia, probably inhabited the cavities in the edge of the lakeside tableland, coming onto the lake surface to feed on the numerous ant populations. The habitat must have impressed Mueller for it stimulated the only known general article of the whole trip, 'The vegetation of the districts surrounding Lake Torrens' (Mueller 1853b).

By about 23 October he was following the Willochra creek upstream towards the ranges and eventually the marker of Mt Eyre. This area had been recently surveyed by Frederiek Sinnett (Sinnett 1855) so it is likely that Mueller was able to replenish water supplies at Hookina Water, which is on the creek of the same name. From here he moved upstream along Hookina Creek, through Mayo Gorge, following the creek to Arkaba Station. Here Mueller was apparently warmly welcomed by George Marchant, with Mueller (1853a) specifically mentioning his hospitality.

An apparently short trip was then made to Wilpena Pound. Only four collections from here have been located. This suggests that Mueller did not reach the diverse microhabitat areas near the present day Chalet. The horseback route is likely to have been from Arkaba Station to Black Gap, then to the Pound on the southern flank by way of Bridle Gap. This was the common short cut between Arkaba and Wilpena Stations at that time (H. Mincham & F. Teague, pers. comm.). Mueller's collection of *Cyperus lhotskyanus* Boeckler or flat-sedge²⁵ is likely to have been gathered at the permanent waters of nearby Black Gap. The southern Pound was Mueller's furthest point north for the trip.

North from Arkaba Station it is a comparatively easy ride through Madge Gully to the base of Mt Aleck. Although he doesn't name this point in his collections Mueller does make reference to the 'summits' of the Elder Range.²⁶ It is a considerable climb to the top of the range, being almost vertical in places. Here he collected type material of a number of plants, including *Gyrostemon pyramidalis* F. Muell.²³ [= *Codonocarpus*

pyramidalis (F. Muell.) F. Muell.], *Eriostemon lalमतुरorum* F. Muell.²⁶ [= *E. linearis* Cunn. ex Endl.] and *Didiscus glaucifolius* F. Muell.²⁷ [= *Trachymene glaucifolia* (F. Muell.) Benth.].

Late in October he prepared for a fairly rapid southward return. Part of the return route from Arkaba Station may have retraced Mernmerna Creek to the junction of Wonoka Creek, the confluence being the start of Hookina Creek. Wonoka Creek can be followed a good way south before leaving its upstream southeast trend and heading for Yourambulla Peak. This was an early standard route to and from Arkaba (Jessop 1862). From here it is easy travel to Kanyaka, or as Mueller called it, Cudnaka, a locality at which he gathered about 70 specimens, mainly herbs. This is the largest known single collection for the trip. While here he collected type material of *Clara contraria* Braun²⁸ (= *C. vulgaris* L.), an alga still to be found in a few permanent pools in Kanyaka Creek.²⁹

To make the eastern end of Pichi Richi Pass he had to cross the Willochra Plain which was occupied by vast numbers of a species of Kangaroo Rat or Bettong. Their extensive systems of burrows made the plain difficult for horses to travel over without accident. No collection is known for this leg of the journey.

After negotiating Pichi Richi Pass he arrived once more on the coastal plain of eastern Spencer Gulf. Back at Woolundunga Spring, at the western base of Mt Brown, Mueller made another small collection. A syntype specimen of *Abutilon lalophilum* F. Muell.³⁰ is of particular interest for, after writing 'Oc', the first two letters of October, on the label, he crossed them out and put the date as November 1851, thus providing a fairly accurate date of his arrival. A few moisture loving plants such as *Paralobea decorosa* and *Asperula syrticola* (Miq.) Toelken were more than likely sheltering close to the spring. The small size and content of the collection gathered here suggests that no time was taken for the steep climb to Mt Brown, a trip made by Robert Brown and company 49 years before (see accompanying paper in this volume).

About three days later he was at Crystal Brook. A late collection of a few plants labelled as 'November 1851' demonstrates his presence here. A specimen taken on 7 November 'toward the apex of St. Vincent's Gulf, Broughton River'³¹ suggests that he headed south from Crystal Brook, intersecting the Broughton River near the current township of Redhill. From here he followed the river upstream until striking Hope's Trail, which led him via Bungarce Station to Clare. Mueller collected several introduced plant species here, the only apparent indigenous species gathered being *Thysanotus baueri* R. Br. (syn. *T. lumilis* F. Muell.³²). From the infant village of Clare he headed towards Emu Flat (32 km NNE of Kapunda), arriving back at Tanunda on, or about, 12 November.

After about six weeks in the bush Mueller had accomplished much with limited personal resources. From temperate areas he had travelled into the arid fringes of South Australia, making the first scientific plant collections in the area since Robert Brown in 1802. It is hardly surprising therefore that his collection contains a large number of type specimens. Of about 270 species collected during this trip, approximately 90, all deemed to be new to science, were described from specimens gathered on this excursion.

In July 1851 the change of land policy, from occupational licences to pastoral leases, was the start of a trend towards closer land settlement. This had mostly disastrous results for the indigenous flora. On the limits of the pastoral frontier Mueller had collected what was the beginning of a flora of introduced plants, many of them weedy species.

Although about 270 species were gathered by Mueller plant groups in some localities appear to have been poorly collected. This may reflect seasonal variation or perhaps a loss of some specimens during the journey or at a subsequent time. With regard to cryptogams it is possible that any such collections, if made, would have been directed to European specialists of the day.

The paucity of written details of this trip, along with the possible distribution of unicates from MEL, is unfortunate as it has tended to underrate the importance of this collection and has led to inaccuracies by some workers when examining material. This alone seemed reason enough for attempting to piece together the diverse data on this trip that survive today.

Acknowledgements

Several descendants of Mueller's relatives assisted with this project: Mrs Beryl Arthur, the late Mr A. V. Stenhouse and his son Neville, and Mrs Melva Armstrong.

A number of researchers shared their knowledge with me: Dr Thomas Darragh, Dr J. H. Willis, Bishop Rosier, Hans Mincham, Mr K. T. Borrow L.L.B., David Schubert, Heather Sizer, Ted Mertens, Fred Teague, Jack Babbage and Pauline Powell.

A number of landholders allowed access to their land and provided background knowledge: John Schultz, Lady Hawker, Alastair Angus, Rosemary & Doug Pedler, Graham Smart, Adrian Lawrie, Glen Woolford, Eric Hillum, Dean Herde, Brian Daniels, Kevin Fitzgerald, Peter & Jeff McInnes and Dean Rasheed.

Several people in public institutes provided valuable information: Dr J. H. Ross & Mrs Doris Sinkora of MEL, officers at the Lands Department of South Australia, and staff at K.

To all these people, as well as friends such as Margaret & Heinz Wild of Wirrabara, and my wife Sue, I extend my sincere thanks.

Notes

1. Charles Stuart sailed to Launceston in the brig *Henry* about April/May 1848. (MS notes compiled by J. H. Willis, MEL library.)
2. Advertisement in *The South Australian Register*, dated Wednesday, 20 Sept. 1848, p. 2a.
3. Letter from Behr to G. Kunze, sent from Tanunda, dated 14 April 1849. Published in *Bot. Zeitung (Berlin)* 7: 873-876. Translated from German by Mrs D. Sinkora (MEL).
4. Unpublished letter from Mueller to Sturt, dated 25 September 1850. G.R.O. 2111 Adelaide.
5. Unpublished letter from Sturt to Mueller, dated 27 September 1850. G.R.O. 537 Adelaide.
6. Unpublished letter from Mueller to Colonial Secretary's Office, dated 18 February 1851. G.R.O. 380 Adelaide.
7. *South Australian Govt Gaz.*, 11 September 1851, p. 634.
8. Fiedler arrived in the Colony in November 1838 with Pastor Kavel and many other German migrants. His house, which is still standing, on section 1 of the Hundred of Moorooroo in the Barossa Valley, was a place of focus for a developing intellectual community (Grandison 1985).
9. Mueller, in a letter dated 10 October 1882, to his niece Louisa Wehl, postmistress at Appila, stated that '... I was only once in your locality, I got a few plants, merely passing through on my way to the Flinders- and Elders-Ranges. It was spring also ...'. Appila is on the eastern edge of the southern Flinders Ranges. Original letter in MEL library.
10. A more or less complete listing of the collections gathered by Mueller on this trip are held by the author. A more incomplete list is held at MEL.
11. Statistics supplied by the Bureau of Meteorology show that a cold front, with rain, passed through Adelaide and it probably penetrated the Barossa Valley.

12. *Linnaea* 25: 381 (1853). Syntypes at MEL include: 'An schattigen felsigen Abhängen im Flinders-range, 7 Oct. 51, Dr. M.' and 'Crystal brook, N. Holl. austr., Oct. 51, Ferd. Mueller, Dr.'
13. *Linnaea* 25: 386 (1853). Lectotype: Crystal Brook, Oct. 1851 (MEL), *fide* E. A. Shaw, *Trans. & Proc. Roy. Soc. South Australia* 89: 179–181 (1965).
14. *Linnaea* 25: 426 (1853). Two syntypes at MEL: 'Wulpena, Baruta, Crystal brook in the stony beds of the creeks and amongst the rocks on the hills. Oct. 51. Dr. M.' and 'Zwischen Wulpena & Arkaba an ausgetrockneten Bächen Oct. 51.'
15. *Linnaea* 25: 430 (1853). Two syntypes at MEL: 'In vallibus tractus montani Flinders-ranges prope M. Remarkable, M. Brown & loces interdos. Oct. 51. Dr. M.' and 'In vallibus saxosis montium Flinders-ranges. Oct. 51.'
16. *Fragm.* 1: 6 (1858). Syntypes at MEL include: 'Flinders-range! Nov. Holl. austr. Oct. 51. Ferd. Mueller, Dr.' and 'In interioribus Nov. Holl. austr. M. Remarkable versus. Oct. Li.'
17. MEL 106347, MEL 664285, see Ross 1988.
18. HBG p.p., see Barker 1982, p. 194.
19. MEL 41490, see Barker 1982, p. 212.
20. J. E. Brown (1890) referred to part of a letter from Mueller re the presence of this species near Mt Remarkable.
21. See Art Gallery of South Australia holding 'Looking NW from Depot Creek near Mt Arden' by S. T. Gill.
22. *Grandison* 5090 (MEL).
23. *Linnaea* 25: 438 (1853). T: 'In collibus humilibus parum fertilibus loci Moralalle nativis dicti prope montes Elders-range, ubi primo reperit el. George Merchant [Marchant].' Five syntypes at MEL; MEL 589695–589699.
24. Unpublished letter from Mueller to F. McCoy, dated 10 February 1869. National Museum of Victoria. Inward correspondence 1856–1950, box M.
25. Collection mounted on two sheets, MEL 517280 & 517281, and with the label 'Wulpena. N. Holl. austr. Oct. 51, Ferd. Mueller.'
26. *Linnaea* 25: 376 (1853). T: 'Ad summitates lapidosissimas vix ascendendas montives Elders-range dictorum et circum jacentium.' Mueller also recorded that this plant was known as 'Rock Wallaby shrub'. This presumably alludes to the habitat of the Yellow-footed rock wallaby, *Petrogale xanthopus*, which is still found in small colonies in the Elder Range.
27. *Linnaea* 25: 395 (1853). T: 'Unico tantum loco reperi, nempe: ad quondam rivulum inter Moralalle et Elders-range in solo rupestri tempore plumviarum humido, umbrato.'
28. *Linnaea* 25: 708–709 (1853). 'In Nova Hollandia australi interiore prope Cudnaka legit. Dr. F. Müller.'
29. It is possible that the Kanyaka area was brought to Mueller's attention by geologist Dr George Bruhn, who searched for coal in the region in the summer of 1849 (Bruhn 1849). Bruhn arrived in South Australia on the same ship as Mueller.
30. The label information was recorded some years ago by Mrs D. M. Sinkora. At the time the specimens were unmounted and unnumbered. This particular label no longer accompanies syntype specimens of *A. halophilum* (MEL 594392, MEL 594393). It was probably discarded when the specimens were mounted.
31. J. H. Willis pers. comm., specimen at MEL not seen by me.
32. *Fragm.* 1: 22 (1858). T: Broughton R. and Clare village, Nov. 1851, *fide* N. H. Brittan, *Brunonia* 4: 94 (1981).

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